AD_____

GRANT NO: DAMD17-94-J-4177

TITLE: Breast Cancer Resource for Research and Banking, with Emphasis on Early Tumors

PRINCIPAL INVESTIGATOR(S): Helen Feiner, M.D.

CONTRACTING ORGANIZATION: New York University Medical Center
New York, New York 10016

REPORT DATE: January 1996

TYPE OF REPORT: Annual

PREPARED FOR: U.S. Army Medical Research and Materiel Command
Fort Detrick, Frederick, Maryland 21702-5012

REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 0704-0188

1. AGENCY USE ONLY *(Leave blank)*	2. REPORT DATE	3. REPORT TYPE AND DATES COVERED
	January 1996	Annual (1 Dec 94 - 30 Nov 95)

4. TITLE AND SUBTITLE

Breast Cancer Resource for Research and Banking, with Emphasis on Early Tumors

5. FUNDING NUMBERS

DAMD17-94-J-4177

6. AUTHOR(S)

Helen Feiner, M.D.

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)

New York University Medical Center
New York, New York 10016

8. PERFORMING ORGANIZATION REPORT NUMBER

9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)

U.S. Army Medical Research and Materiel Command
Fort Detrick
Frederick, Maryland 21702-5012

10. SPONSORING/MONITORING AGENCY REPORT NUMBER

11. SUPPLEMENTARY NOTES

12a. DISTRIBUTION/AVAILABILITY STATEMENT

Approved for public release; distribution unlimited

12b. DISTRIBUTION CODE

13. ABSTRACT *(Maximum 200 words)*

The Breast Cancer Resource for Research and Banking has accrued the numbers and types of tissue samples anticipated during the first year of operation.

The existence of the Resource has been publicized within the Medical Center.

Material has been distributed to investigators. Additional utilization will be stimulated in year #2 by the internal funding of 3 pilot projects in collaborative breast cancer research.

14. SUBJECT TERMS

breast cancer; precancerous breast disease; fine needle aspiration; touch preparations; imprint cytology

15. NUMBER OF PAGES

17

16. PRICE CODE

17. SECURITY CLASSIFICATION OF REPORT	18. SECURITY CLASSIFICATION OF THIS PAGE	19. SECURITY CLASSIFICATION OF ABSTRACT	20. LIMITATION OF ABSTRACT
Unclassified	Unclassified	Unclassified	Unlimited

GENERAL INSTRUCTIONS FOR COMPLETING SF 298

The Report Documentation Page (RDP) is used in announcing and cataloging reports. It is important that this information be consistent with the rest of the report, particularly the cover and title page. Instructions for filling in each block of the form follow. It is important to ***stay within the lines*** to meet ***optical scanning requirements***.

Block 1. Agency Use Only *(Leave blank)*.

Block 2. Report Date. Full publication date including day, month, and year, if available (e.g. 1 Jan 88). Must cite at least the year.

Block 3. Type of Report and Dates Covered. State whether report is interim, final, etc. If applicable, enter inclusive report dates (e.g. 10 Jun 87 - 30 Jun 88).

Block 4. Title and Subtitle. A title is taken from the part of the report that provides the most meaningful and complete information. When a report is prepared in more than one volume, repeat the primary title, add volume number, and include subtitle for the specific volume. On classified documents enter the title classification in parentheses.

Block 5. Funding Numbers. To include contract and grant numbers; may include program element number(s), project number(s), task number(s), and work unit number(s). Use the following labels:

C	- Contract	**PR**	- Project
G	- Grant	**TA**	- Task
PE	- Program Element	**WU**	- Work Unit Accession No.

Block 6. Author(s). Name(s) of person(s) responsible for writing the report, performing the research, or credited with the content of the report. If editor or compiler, this should follow the name(s).

Block 7. Performing Organization Name(s) and Address(es). Self-explanatory.

Block 8. Performing Organization Report Number. Enter the unique alphanumeric report number(s) assigned by the organization performing the report.

Block 9. Sponsoring/Monitoring Agency Name(s) and Address(es). Self-explanatory.

Block 10. Sponsoring/Monitoring Agency Report Number. *(If known)*

Block 11. Supplementary Notes. Enter information not included elsewhere such as: Prepared in cooperation with...; Trans. of...; To be published in.... When a report is revised, include a statement whether the new report supersedes or supplements the older report.

Block 12a. Distribution/Availability Statement. Denotes public availability or limitations. Cite any availability to the public. Enter additional limitations or special markings in all capitals (e.g. NOFORN, REL, ITAR).

- **DOD** - See DoDD 5230.24, "Distribution Statements on Technical Documents."
- **DOE** - See authorities.
- **NASA** - See Handbook NHB 2200.2.
- **NTIS** - Leave blank.

Block 12b. Distribution Code.

- **DOD** - Leave blank.
- **DOE** - Enter DOE distribution categories from the Standard Distribution for Unclassified Scientific and Technical Reports.
- **NASA** - Leave blank.
- **NTIS** - Leave blank.

Block 13. Abstract. Include a brief *(Maximum 200 words)* factual summary of the most significant information contained in the report.

Block 14. Subject Terms. Keywords or phrases identifying major subjects in the report.

Block 15. Number of Pages. Enter the total number of pages.

Block 16. Price Code. Enter appropriate price code *(NTIS only)*.

Blocks 17. - 19. Security Classifications. Self-explanatory. Enter U.S. Security Classification in accordance with U.S. Security Regulations (i.e., UNCLASSIFIED). If form contains classified information, stamp classification on the top and bottom of the page.

Block 20. Limitation of Abstract. This block must be completed to assign a limitation to the abstract. Enter either UL (unlimited) or SAR (same as report). An entry in this block is necessary if the abstract is to be limited. If blank, the abstract is assumed to be unlimited.

*U.S.GPO:1993-0-358-779

FOREWORD

Opinions, interpretations, conclusions and recommendations are those of the author and are not necessarily endorsed by the US Army.

____ Where copyrighted material is quoted, permission has been obtained to use such material.

____ Where material from documents designated for limited distribution is quoted, permission has been obtained to use the material.

NF Citations of commercial organizations and trade names in this report do not constitute an official Department of Army endorsement or approval of the products or services of these organizations.

____ In conducting research using animals, the investigator(s) adhered to the "Guide for the Care and Use of Laboratory Animals," prepared by the Committee on Care and Use of Laboratory Animals of the Institute of Laboratory Resources, National Research Council (NIH Publication No. 86-23, Revised 198[illegible]).

NF For the protection of human subjects, the investigator(s) adhered to policies of applicable Federal Law 45 CFR 46.

____ In conducting research utilizing recombinant DNA technology, the investigator(s) adhered to current guidelines promulgated by the National Institutes of Health.

____ In the conduct of research utilizing recombinant DNA, the investigator(s) adhered to the NIH Guidelines for Research Involving Recombinant DNA Molecules.

NF In the conduct of research involving hazardous organisms, the investigator(s) adhered to the CDC-NIH Guide for Biosafety in Microbiological and Biomedical Laboratories.

[illegible] MD 1/27/96

PI - Signature Date

TABLE OF CONTENTS

INTRODUCTION

Improved detection has resulted in a reduction in the average size of invasive breast cancers in mammogram-screened populations during the past 10-15 years. Data from our Institution is shown below in Table I. Note that small primary invasive breast cancers, usually defined as tumors less than 1 cm. in size, now account for almost one-third (30.7%) of breast cancers at our University Hospital. In 1983 such tumors accounted for only 6.4% of invasive cancers.

TABLE I

SIZE OF INVASIVE CARCINOMA OF THE BREAST AT TISCH HOSPITAL, NYU MEDICAL CENTER BY YEAR

	1983	1987	1991	1994
# cases*	78	96	91	101
mean size (cm.)	2.12	1.97	1.63	1.58
# (%) < 1 cm.	5 (6.4)	15 (15.6)	23 (25.3)	31 (30.7)
# (%) < 0.5 cm.	2 (2.5)	2 (2.1)	10 (11.0)	14 (13.9)

*Data spans the 6 month period January to June for each year.

Additionally, the precursor lesions of invasive carcinoma, namely ductal carcinoma in situ and florid hyperplasia, previously rarely encountered in the absence of an associated invasive carcinoma, are now frequently seen as the sole pathology in surgical biopsy material.

Many cancer research techniques require the use of fresh tissue. In the case of most small breast cancers, in situ cancers and precancerous lesions no tissue can be spared for research purposes since the entire lesion is used for clinically necessary analyses (precise histologic classification, hormone receptors, cell cycle, and other assays) which determine further patient care decisions (Ref. 1). Therefore, human breast cancer research that requires fresh tissue has, to date, relied on samples of large/advanced cancers from which pieces could be spared for research purposes without compromising patient care.

We proposed that fine needle aspiration and tissue imprints/touch preps, two techniques increasingly used for clinical diagnosis, could be used to acquire small specimens of early cancers and precancers of the breast, without compromising patient care. Such specimens could provide researchers with new material for studies of human breast carcinogenesis.

METHODS

A breast cancer resource technician was hired and trained by the Principal Investigator in the acquisition of material from various types of breast tissue surgical specimens with clinically and mammographically defined lesions.

Capital items, in particular a deep freezer and a personal computer, were purchased, as well as necessary small equipment and supplies.

Tissue and cell banking protocols were established.

Record-keeping was established using an IBM-compatible PC and "Microsoft Access 2.1" , a relational database in a customized format.

For the past year we have been collecting samples of small invasive breast cancers and precursor lesions using fine needle aspiration and imprint/scrape cytology preparations. We have also, of course, collected samples of larger primary as well as metastatic tumors and normal breast tissue (paired samples), using conventional tissue banking methods.

The availability of early breast cancers and precursor lesions has been made known to the NYU research community through the Kaplan Comprehensive Cancer Center's quarterly publication, "Lab Notes", pages 2-3 (see Appendix).

RESULTS

During the period 12/1/94 - 11/30/95 breast tissue samples from 430 cases have been banked and entered into our database. The breakdown by histopathologic type of lesion is shown in Table II.

The banked material is classified according to the type(s) of available sample(s) in Table III. Note that in this table the number of samples exceeds the number of cases because a single case often yielded more that one sample type.

TABLE II

CASES FROM TISCH AND BELLEVUE HOSPITALS, NYU MEDICAL CENTER, THAT ARE BANKED IN THE BREAST TISSUE RESOURCE, BY HISTOPATHOLOGIC DIAGNOSIS

	Tisch	Bellevue	Total
Invasive Ductal Carcinoma	111	7	118
Invasive Lobular Carcinoma	15	1	16
In-Situ Ductal Carcinoma	51	4	55
In-Situ Lobular Carcinoma	11	0	11
Secondary Carcinoma	44	7	25
Fibroadenoma	40	8	48
Fibrocystic - Proliferative	77	9	86
Normal/Non Proliferative Fibrocystic, Other	62	9	71
TOTAL	411	45	456

TABLE III

BANKED SAMPLES OF BREAST CANCER AND PRECANCEROUS LESIONS FROM TISCH AND BELLEVUE HOSPITALS, NYU MEDICAL CENTER, BY SAMPLE TYPE

	Tisch	Bellevue	Total
Imprints/touch preps	332	35	367
Aspirated cells	135	14	149
Snap frozen tissue fragments	197	36	233
TOTAL	664	85	749

CONCLUSIONS

Our goals in terms of amount of material acquired and the range of pathologic types of breast diseases, have been met for the first year of collection.

Changes and future work: Since January 1, 1996 we have added to the types of specimens collected samples of normal (non-tumoral) lymph nodes from patients with breast cancer who have lymph node resections. One-third to one-half of a single grossly negative lymph node is acquired, under the direct supervision of the responsible attending pathologist. This material is of potential use in investigations of immune responses in tumor-draining lymph nodes.

To stimulate utilization of our resource, applications were requested for pilot projects in collaborative research on breast cancer to be funded by the Kaplan Comprehensive Cancer Center Breast Cancer Program Planning Grant, 5R21 CA66229-02, from the National Cancer Institute. Eleven proposals were submitted, of which three were funded (one year grants for 1996):

1) Cowin, P. - "The role of plakoblobin in breast cancer."
2) Sun, X.-H. - "The role of ID proteins in breast cancer."
3) Perle, M.A. and Illei, P. - "Interphase cytogenetic study of chromosome 7, 18, 20 and X in mammogram detected atypical ductal hyperplasia and ductal carcinoma in situ."

In collaboration with the NYU Grants Administration and Research Services an updated listing of all material available in the Breast Cancer Resource is being distributed to all NYU investigators who hold breast cancer grants or will receive breast cancer grants in the future.

REFERENCE

1) Moezzi, M., Melamed, J., Vamvakas, E., Inghirami, G., Mitnick, J., Quish, A., Bose, S., Roses, D., Harris, M., and Feiner, H. Morphologic and biologic characteristics of mammogram-detected invasive breast cancer. (Accepted for publication in Human Pathology).

KAPLAN COMPREHENSIVE CANCER CENTER

New York University Medical Center

Lab Notes

550 First Avenue
New York, NY 10016
(212) 263-5349

July, 1995
Volume 7
Number 3

A quarterly news bulletin of recent oncology research activities at the Kaplan Comprehensive Cancer Center of NYU Medical Center.

CORE FACILITIES

Biostatistics
Neil Dubin, Ph.D.
263-6500

Cell Sorting
Ross Basch, M.D.
263-5344

Coordinated Computing Facility
Ross Smith, M.D., Ph.D.
263-5356

Core Clinical Laboratory
Leonard Liebes, Ph.D.
263-5757

Histopathology & Electron Microscopy
Maarten Bosland, Ph.D.
(885)-5216

Imaging & Microscopy
John Hill, Ph.D.
263-7689

Inhalation & Animal Care
Carroll Snyder, Ph.D.
(885)-5297

ARMY INVITES BREAST CANCER APPLICATIONS

The Department of the Army has issued a 1995 Broad Agency Announcement soliciting proposals related to breast cancer. The types of programs, available funds and deadline dates are indicated below.

Training and Recruitment - Up to $14.7 million is allocated for training and recruitment in breast cancer to be funded as Predoctoral Fellowships, Postdoctoral Fellowships or Career Development Awards. The application submission deadline for training and recruitment projects is **September 8, 1995**.

Research Projects - Up to $100 million is allocated for research projects which respond to any of the below six fundamental research issues (although any breast cancer related project will be considered).

o What genetic alterations are involved in the origin and progression of breast cancer?

o What are the changes in cellular and molecular functions that account for the development and progression of breast cancer?

CORE FACILITIES

Macromolecular Sequencing & Synthesis
Bernard Goldschmidt, Ph.D.
263-5743

Mass Spectrometry
Jerome Solomon, Ph.D.
(885)-5284

Molecular Epidemiology
Elizabeth Snow, Ph.D.
(885)-3172

Patient Research Resources
Ruth Oratz, M.D.
263-6485

Resource for Tumor Tissue
Rita Demopoulos, M.D.
263-6451

Transgenic Mouse Research
Elizabeth Newcomb, Ph.D.
263-8757

PROGRAMS

Cancer Epidemiology & Prevention
Paolo Toniolo, M.D.
263-6499

Environmental Carcinogenesis
Seymour Garte, Ph.D.
263-8903

Molecular & Tumor Immunology
G. Jeanette Thorbecke, M.D., Ph.D.
263-5345

Cell Interactions
Daniel Rifkin, Ph.D.
263-5109

Genetic & Molecular Toxicology
George Teebor, M.D.
263-5473

Molecular & Viral Oncology
Angel Pellicer, M.D., Ph.D.
263-5342

Clinical Oncology Research
Ronald Blum, M.D.
263-6485

Growth Regulation
Claudio Basilico, M.D.
263-5341

Army Invites Breast Cancer Applications (Continued)

o What is the role of endogenous or exogenous risk factors in the development of breast cancer as elucidated in population studies or other epidemiological investigations?
o How can investigators use what is known about the genetic and cellular changes in breast cancer patients to improve detection, diagnosis, prevention,. treatment and follow-up care?
o What is the impact of risk, disease, treatment, and ongoing care on the psycho-social and clinical outcomes of breast cancer patients and their families?
o How can the investigators define and identify techniques for delivering effective and cost-effective health care to all women and men to prevent, detect, diagnose, treat, and facilitate recovery from breast cancer?

Awards will be made in the categories of New Investigator awards, Innovative Developmental and Exploratory Awards (IDEA) and Other Investigator Initiated Awards. The deadline for submission of research project applications is **September 13, 1995** .

Mammography/Breast Imaging - Up to $20 million is allocated for mammography/breast imaging projects under award categories Innovative Developmental and Exploratory Awards (IDEA); Other Investigator Initiated Awards; and Demonstration Projects. The deadline for submission of Mammography/Breast Imaging applications is **September 13, 1995.**

For further information and assistance please call Mr. Ira Goodman at extension 6703.

FACULTY HIGHLIGHTS

The following individual has been appointed a member of the Kaplan Comprehensive Cancer Center:

Dan Littman, M.D., Ph.D., Professor, Departments of Pathology and Microbiology and Molecular Pathogenesis Program Coordinator, Skirball Institute - Dr. Littman's interests lie in the area of molecular mechanisms of T cell activation and thymic development.

RESEARCH RESOURCES

Breast Tissue Resource for Research and Banking

The Breast Tissue Resource for Research and Banking was established in January, 1995 to provide investigators at NYU with neoplastic, preneoplastic and normal breast tissue. The Resource is funded as an infrastructure grant by the Department of the Army. To date 184 specimens have been accessioned. The emphasis of this effort is on the acquisition of precancerous breast lesions and early cancers. To obtain material and for further information contact Dr. Helen Feiner at extension 8826.

Precursor lesions of breast cancer are often clinically silent, are detected mammographically, and usually can not be seen with the naked eye in resected tissue. Because of the need to histologically define the most advanced lesion in each patient, pieces of tissue cannot be removed for research purposes from breast excisions for mammographically defined abnormalities. Instead, epithelial cells have been collected on multiple slides (imprints/touch or scrape preparations).

10-20 slides have been collected in each case. These were air dried and frozen at -70^{o}C. Such samples are suitable for immunocytochemistry, immunofluorescence microscopy, in-situ hybridization and in-situ PCR. Cells can also be removed from slides for DNA extraction.

The inventory currently is as follows:

Imprints/Scrape Preparations by Diagnosis	# of Cases
Non-proliferative fibrocystic change	13
Proliferative fibrocystic change	21
Atypical proliferative fibrocystic change	5

Imprints/Scrape Preparations by Diagnosis	# of Cases
In situ lobular carcinoma	4
In situ ductal carcinoma	22
Early invasive lobular carcinoma	6
Early invasive ductal carcinoma	25
Fibroadenoma	10
Intraductal papilloma	4
Other	6
TOTAL	116

It is generally accepted that invasive breast cancers arise from histopathologically defined precursors: non-proliferative fibrocystic change (no increased risk), proliferative fibrocystic change (1.5 - 2 x increased risk), atypical proliferative fibrocystic change (4 x increased risk), lobular carcinoma in situ (10-11 x increased risk), and ductal carcinoma in situ (10 - 11 x increased risk, higher for high grade DCIS). The numbers refer to risk at 15 years of follow-up.

Standard banking of frozen pieces of tissue from established cancers and fibroadenomas has also been done. In such cases paired samples of normal and pathologic tissue are usually banked.

The inventory currently is as follows:

Frozen Tissue by Diagnosis	# of Cases
Invasive ductal carcinoma	47
Invasive lobular carcinoma	10
Secondary carcinoma (lymph node)	3
Fibroadenoma	8
TOTAL	68*

(*paired sample of normal tissue available in 40 of the above cases).

The Breast Tissue Resource can also provide fresh breast cancer tissue and freshly prepared imprints to investigators prospectively.

NEW CLINICAL TRIALS

Phase II Study of SDZ PSC 833 in Combination with Paclitaxel in Patients with Paclitaxel-Refractory Advanced Ovarian Cancer. Investigator: Howard Hochster, M.D., beginning July 1, 1995.

Phase II Study of 9-20S-Amino-Camptothecin (9-AC) as Second Line Therapy in Advanced Ovarian Carcinoma. Investigator: Howard Hochster, M.D., beginning July 1, 1995.

Protocol 157-001 - A Prospective, Randomized, Multicenter Phase III Clinical Trial Comparing the Effects of Panorex 17-1 A monoclonal antibody) Injection Plus 5-Fluorouracil Plus Levamisole Versus 5-Fluorouracil Plus Levamisole in Patients with Surgically Resected Stage III Carcinoma of the Colon. Investigator: Howard Hochster, M.D., beginning July 1, 1995.

PUBLICATIONS

(Kaplan Comprehensive Cancer Center members are noted by underscoring)

Aston, C., Jagirdar, J., Lee, T.C., Hur, T., Hintz, R.L. and Rom, W.N. Enhanced insulin-like growth factor molecules in idiopathic pulmonary fibrosis. American Journal of Respiratory and Critical Care Medicine 151(5): 1597-1603, 1995.

Bi, Z. and Reiss, C.S. Inhibition of vesicular stomatitis virus infection by nitric oxide. J. Virology, 69:2208-2213, 1995.

Bikfalvi, A., Klein, S., Pintucci, G., Quarto, N., Mignatti, P. and Rifkin, D.B. Differential modulation of cell phenotype by different molecular weight forms of basic fibroblast growth factor: Possible intracellular signaling by the high molecular weight forms. Journal of Cell Biology, 129(1):233-243, 1995.

Black, V.H., Wittig, J.C. and Cheung, P. Intraadrenal steroid metabolism in the guinea pig: Guinea pig adrenal microsomes metabolize androstenedione in a manner distinct from liver microsomes. Endocrine Research, 21(1&2):315-328, 1995.

Boorstein, R.J., Haldar, J., Poirier and Putnam, D. DNA base excision repair of 5-hydroxymethyl-2'-deoxyuridine stimulates poly(ADP-ribose) synthesis in Chinese hamster cells. Carcinogenesis, 16(5):1173-1179, 1995.

Brinton, L.A., Toniolo, P.G. and Pasternack, B.S. Epidemiologic follow-up studies of breast augmentation patients. J. Clin. Epidemiol., 48:557-563, 1995.

Cao, Y., Qin, L., Zhang, L., Safrit, J. and Ho, D.D. Virologic and immunologic characterization of long-term survivors of human immunodeficiency virus type 1 infection [see comments]. New England Journal of Medicine, 332(4):201-208, 1995.

Castano, E. M., Prelli, F., Wisniewski, T., Golabek, A., Kumar, R., Soto, C. and Frangione, B. Fibrillogenesis in Alzheimer's disease of amyloid beta peptides and apolipoprotein E. Biochemical Journal, 306(2):599-604, 1995.

Costa, M. Model for the epigenetic mechanism of action of nongenotoxic carcinogens. Am. J. Clin. Nutr., 61(Suppl.):666S-669S, 1995.

Cronstein, B.N. Clinical use of methylprednisolone sodium succinate: A review. Curr. Ther. Res. Clin. Exp., 56(1):1-15, 1995.

Cronstein, B.N. and Weissmann, G. Targets for antiinflammatory drugs. Annual Review of Pharmacology and Toxicology, 35:449-462, 1995.

Cui, J. and Bystryn, J-C. Melanoma and vitiligo are associated with antibody responses to similar antigens on pigment cells. Archives of Dermatology, 131(3):314-318, 1995.

Dolzhanskiy, A. and Basch, R.S. Flow cytometric determination of apoptosis in heterogeneous cell populations. Journal of Immunological Methods, 180(1):131-140, 1995.

Einheber, S., Hannocks, F., Metz, C.N., Rifkin, D.B. and Salzer, J.L. Transforming growth factor-beta1 regulates axon/Schwann cell interactions. Journal of Cell Biology, 129(2):443-458, 1995.

El-Fawal, H. A. N., McGovern, T. and Schlesinger, R.B. Nonspecific bronchial responsiveness assessed in vitro following acute inhalation exposure to ozone and ozone/sulfuric acid mixtures. Exp. Lung Res, 21(1):129-139, 1995.

Epstein, F. J. and Jenkin, R.D. Spinal cord tumors in children (1). Journal of Neurosurgery, 82(3):516-517, 1995.

Friedman-Kien, A. Management of condylomata acuminata with Alferon N injection, interferon alfa-n3 (human leukocyte derived). American Journal of Obstetrics and Gynecology, 172(4):1359-1368, 1995.

Ghiso, J., Plant, G.T., Revesz, T., Wisniewski, T. and Frangione, B. Familial cerebral amyloid angiopathy (British type) with nonneuritic amyloid plaque formation may be due to a novel amyloid protein (1). Journal of the Neurological Sciences, 129(1):74-75, 1995.

Goncharova, E.I. and Rossman, T.G. The antimutagenic effects of metallothionein may involve free radical scavenging. In: Genetic Response to Metals. B. Sarkar (Ed.), Marcel Dekker, Inc., New York, pp. 87-100, 1995.

Guo, Y., Wu, Y., Zhao, M., Kong, P. and Liu, Y. Mutational analysis and an alternatively spliced product of B7 defines its CD28/CTLA4-binding site on immunoglobulin C-like domain. Journal of Experimental Medicine, 181(4):1345-1355, 1995.

Han, X., Liehr, J.G. and Bosland, M.C. Induction of a DNA adduct detectable by 32P-postlabeling in the dorsolateral prostate of NBL/Cr rats treated with estradiol-17beta and testosterone. Carcinogenesis, 16(4):951-954, 1995.

Ho, D.D., Neumann, A.U., Perelson, A.S., Chen, W., Leonard, J.M. and Markowitz, M. Rapid turnover of plasma virions and CD4 lymphocytes in HIV-1 infection. Nature, 373(6510):123-126, 1995.

Hochster, H., Fumoleau, S., Hortobagyi, G.N. and Norris, O. Combined doxorubicin/vinorelbine (Navelbine) therapy in the treatment of advanced breast cancer. Seminars in Oncology, 5:55-60, 1995.

Huang, J., Mohammadi, M., Rodrigues, G.A. and Schlessinger, J. Reduced activation of Raf-1 and MAP kinase by a fibroblast growth factor receptor mutant deficient in stimulation of phosphatidylinositol hydrolysis. Journal of Biological Chemistry, 270(10):5065-5072, 1995.

Huang, Y., Zhang, L. and Ho, D.D. Characterization of nef sequences in long-term survivors of human immunodeficiency virus type 1 infection. Journal of Virology, 69(1):93-100, 1995.

Jacob, K. K. and Stanley, F.M. Insulin and cyclic adenosine monophosphate increase prolactin gene expression through different response pathways. Molecular and Cellular Endocrinology, 109(2):175-181, 1995.

Kaplan, L.A.E., Van Cleef, K., Wirgin, I. and Crivello, J.F. A comparison of RT-PCR and northern blot analysis in quantifying metallothionein mRNA levels in killifish exposed to waterborne cadmium. Marine Environmental Research, 39:1-4, 1995.

Karpatkin, S., Nardi, M. A. and Hymes, K. B. Sequestration of anti-platelet GPIIIa antibody in rheumatoid factor immune complexes of human immunodeficiency virus 1 thrombocytopenic patients. Proceedings of the National Academy of Sciences of the United States of America, 92(6):2263-2267, 1995.

Karpatkin, S., Nardi, M. A., Liu, X., Kouri, Y. H. and Borkowsky, W. Production of a human anti-CD4 monoclonal antibody with antiidiotype to anti-HIV type 1 glycoprotein 120. AIDS Research and Human Retroviruses, 11(4):509-515, 1995.

Klampfer, L., Chen-Kiang, S. and Vilcek, J. Activation of the TSG-6 gene by NF-IL6 requires two adjacent NF-IL6 binding sites. Journal of Biological Chemistry, 270(8):3677-3682, 1995.

Kojima, S., Vernooy, R., Moscatelli, D., Amanuma, H. and Rifkin, D.B. Lipopolysaccharide inhibits activation of latent transforming growth factor-beta in bovine endothelial cells. Journal of Cellular Physiology, 163(1):210-219, 1995.

Lavie, G., Mazur, Y., Lavie, D. and Meruelo, D. The chemical and biological properties of hypericin - A compound with a broad spectrum of biological activities. Medicinal Research Reviews, 15(2):111-119, 1995.

Lee, M., Rezai, A.R., Abbott, R., Coelho, D.H. and Epstein, F.J. Intramedullary spinal cord lipomas. Journal of Neurosurgery, 82(3):394-400, 1995.

Lee Y, Klein, C.B., Kargacin, B., Salnikow, K., Kitahara, J., Dowjat, K., Zhitkovich, A., Christie, N.T. and Costa, M. Carcinogenic nickel silences gene expression by chromatin condensation and DNA methylation: A new model for epigenetic carcinogens. Molecular and Cellular Biology, 15(5):2547-2557, 1995.

Lippmann, M. Exposure data needs in risk assessment and risk management: Database information needs. Applied Occupational and Environmental Hygiene, 10(4):244-250, 1995.

Markowitz, M., Mo, H., Kempf, D.J., Norbeck, D.W., Bhat, T.N., Erickson, J.W. and Ho, D.D. Selection and analysis of human immunodeficiency virus type 1 variants with increased resistance to ABT-538, a novel protease inhibitor. Journal of Virology, 69(2): 701-706, 1995.

Megibow, A. J., Zhou, X.H., Rotterdam, H., Francis, I.R., Zerhouni, E.A., Balfe, D.M., Weinreb, J.C., Aisen, A., Kuhlman, J., Heiken, J.P., Gatsonis, C. and McNeil, B.J.. Pancreatic adenocarcinoma: CT versus MR imaging in the evaluation of resectability - Report of the radiology diagnostic oncology group. Radiology, 195(2):327-332, 1995.

Mi, L.-J., Chiu, L.-N., Mahl, E. and Boorstein, R.J. Toxicity of camptothecin to Chinese hamster cells containing 5-hydroxymthyl-2'-deoxyuridine in their DNA. Mutation Res., 336:293-305, 1995.

Mills, N. E., Fishman, C.L., Rom, W.N., Dubin, N. and Jacobson, D.R. Increased prevalence of K-ras oncogene mutations in lung adenocarcinoma. Cancer Research, 55(7):1444-1447, 1995.

Mittal, K.R., Goswami, S. and Demopoulos, R.I. Immunohistochemical profile of ovarian inclusion cysts in patients with and without ovarian carcinoma. Histochemical Journal, 27(2):119-122, 1995.

Moore, J. P., Cao, Y., Qing, L., Sattentau, Q.J., Pyati, J.P., Koduri, R., Robinson, J., Barbas, C.F. III, Burton, D.R. and Ho, D.D. Primary isolates of human immunodeficiency virus type 1 are relatively resistant to neutralization by monoclonal antibodies to gp120, and their neutralization is not predicted by studies with monomeric gp120. Journal of Virology, 69(1):101-109, 1995.

Newcomb, E.W. p53 gene mutations in lymphoid diseases and their possible relevance to drug resistance. Leukemia and Lymphoma, 17:211-221, 1995.

Newcomb, E.W., Bayona, W. and Pisharody, S. N-methylnitrosourea-induced K-ras codon 12 mutations are early events in mouse thymic lymphomas. Mol. Carcinogen., 13:1-7, 1995.

Newcomb, E.W., Thomas, A., Selkirk, A., Lee, S.Y., and Potmesil, M. Frequent homozygous deletions of D13S218 on 13q14 in B-cell chronic lymphocytic leukemia independent of disease stage and retinoblastoma gene inactivation. Cancer Res., 55:2044-2047, 1995.

Ooi, J., Yajnik, V., Immanuel, D., Gordon, M., Moskow, J.J., Buchberg, A.M. and Margolis, B. The cloning of Grb10 reveals a new family of SH2 domain proteins. Oncogene, 10(8):1621-1630, 1995.

Pancake, B.A., Zucker-Franklin, D. and Coutavas, E.E. The cutaneous T cell lymphoma, mycosis fungoides, is a human T cell lymphotropic virus-associated disease. A study of 50 patients. J. Clin. Invest., 95(2):547-554, 1995.

Papaevangelou, V., Lawrence, R., Kaul, A., Lefleur, R., Ambrosino, M., Krasinski, K. and Borkowsky, W. Acute renal failure in a human immunodeficiency virus-infected child secondary to bilateral fungus ball formation. Pediatric Infectious Disease Journal, 14(5):401-402, 1995.

Parish, M.A., Grossi, E.A., Baumann, F.G., Asai, T., Rifkin, D.B., Colvin, S.B. and Galloway, A.C. Effects of a single administration of fibroblast growth factor on vascular wall reaction to injury. Annals of Thoracic Surgery, 59(4):948-954, 1995.

Parks, W.P. Point/counterpoint: I. HIV-1 screening of pregnant women. Obstetrical & Gynecological Survey, 50(1):1-2, 1995.

Pasternack, B.S. Sequential tests for cohort and case-control studies. (Letter to the Editor). Epidemiology, 6:95-96, 1995.

Pedraza, L., Spagnol, G., Latov, N., and Salzer, J.L. Biosynthesis and regulation of expression of the HNK-1 epitope on myelin-associated glycoprotein in a transfected cell model system. Journal of Neuroscience Research, 40(6):716-727, 1995.

Pion, I.A., Rigel, D.S., Garfinkel, L., Silverman, M.K. and Kopf, A.W. Occupation and the risk of malignant melanoma. Cancer, 75(2 Suppl):637-644, 1995.

Plakhov, I.V., Aoki, C., Reiss, C.S. and Huang, A.S. Pathogenesis of murine encephalitis is limited by defective interfering virus particles: An immunohistochemical study. J. Neurovirology, 1:207-218, 1995.

Plakhov, I.V., Arlund, E., Aoki, C. and Reiss, C.S. The earliest events in vesicular stomatitis virus infection of the murine olfactory neuroepithelium and entry of the central nervous system. Virology, 209:257-262, 1995.

Plakhov, I.V., Bi, Z., Aoki, C. and Reiss, C.S. The earliest events in vesicular stomatitis virus infection of the murine olfactory neuroepithelium and invasion of the central nervous system. ACLAD Newsletter, 16:7-8, 1995.

Qi, J.S., Desai-Yajnik, V., Greene, M.E., Raaka, B.M. and Samuels, H.H. The ligand-binding domains of the thyroid hormone/retinoid receptor gene subfamily function in vivo to mediate heterodimerization, gene silencing, and transactivation. Molecular & Cellular Biology, 15(3):1817-1825, 1995.

Rajasekaran, A.K., Zhou, Z., Prakash, K., Das, G. and Kreibich, G. Functional characterization of the cis-regulatory elements of the rat ribophorin I gene. Nucleic Acids Research, 23(3):313-319, 1995.

Rossman, T.G., Goncharova, E.I. and Nadas, A. Modeling and measurement of the spontaneous mutation rate in mammalian cells. Mutation Research Fundamental and Molecular Mechanisms of Mutagenesis, 328(1):21-30, 1995.

Saisanit, S. and Sun, X-H. A novel enhancer, the pro-B enhancer, regulates Id1 gene expression in progenitor B cells. Molecular & Cellular Biology, 15(3):1513-1521, 1995.

Saluja, D. and Godson, G.N. Biochemical characterization of Escherichia coli temperature-sensitive dnaB mutants dnaB8, dnaB252, dnaB70, dnaB43, and dnaB454. J. Bacteriol., 177(4):1104-1111, 1995.

Sattentau, Q.J., Zolla-Pazner, S., and Poignard, P. Epitope exposure on functional, oligomeric HIV-1 gp41 molecules. Virology, 206:713-717, 1995.

Schultz, N., Oratz, R., Chen, D., Zeleniuch-Jacquotte, A., Abeles, G. and Bystryn, J.-C. Effect of DETOX as an adjuvant for melanoma vaccine. Vaccine, 13(5):503-508, 1995.

Schweinfest, C.W., Nelson, P.S., Graber, M.W., Demopoulos, R.I. and Papas, T.S. Subtraction hybridization cDNA libraries. Chapter 2. In: In Vitro Transcription and Translation Protocols. M. Tymms (Ed.), Humana Press, Inc., Totowa, New Jersey, pp. 13-30, 1995.

Silber, R., Degar, B., Costin, D., Newcomb, E.W., Mani, M., Rosenberg, R., Morse, L., and Drygas, J., Canellakis, Z.N., and Potmesil, M. Chemosensitivity of lymphocytes from patients with B-cell chronic lymphocytic leukemia to chlorambucil, fludarabine and camptothecin analogs. Blood, 84:3440-3446, 1995.

Speyer, J.L., Mandeli, J., Hochster, H., Runowicz, C., Wadler, S., Wallach, R., Cohen, C., Oette, D., Sorich, J., Demakos, E., Gelpke, L., Goldberg, G., Bruckner, H. and Holland, J. A phase I trial of cyclosphosphamide and carboplatinum combined with interleukin-3 in women with advanced-stage ovarian cancer. Gynecologic Oncology, 56(3):387-394, 1995.

Spinardi, L., Einheber, S., Cullen, T., Milner, T.A. and Giancotti, F.G. A recombinant tail-less integrin beta4 subunit disrupts hemidesmosomes, but does not suppress alpha6beta4-mediated cell adhesion to laminins. Journal of Cell Biology, 129(2):473-487, 1995.

Struyk, A.F., Canoll, P.D., Wolfgang, M.J., Rosen, C.L., D'Eustachio, P. and Salzer, J.L. Cloning of neurotrimin defines a new surfamily of differentially expressed neural cell adhesion molecules. Journal of Neuroscience, 15(3):2141-2156, 1995.

Taioli, E., Crofts, F., Trachman, J., Demopoulos, R., Toniolo, P. and Garte, S.J. A specific African-American CYP1A1 polymorphism is associated with adenocarcinoma of the lung. Cancer Res., 55(3):472-473, 1995.

Taioli, E., Zhitkovich, A., Toniolo, P. and Costa, M. Normal values of DNA-protein crosslinks in mononuclear blood cells of a population of healthy controls. Cancer Journal, 8(2):76-79, 1995.

Tomlinson, S., Jansen, M., Koudinov, A.A., Ghiso, J.A., Choi-Miura, H., Rifkin, M.R., Ohtaki, S. and Nussenzweig, V. High-density-lipoprotein-independent killing of Trypanosoma brucei by human serum. Molecular and Biochemical Parasitology, 70:1-2, 1995.

Toniolo, P., Levitz, M., Zeleniuch-Jacquotte, A., Banerjee, S., Koenig, K.L., Shore, R.E., Strax, P. and Pasternack, B.S. A prospective study of endogenous estrogens and breast cancer in postmenopausal women. J. Natl. Cancer Inst., 87:190-197, 1995.

Wang, B.C., Li, D., Hiller, J.M., Hillman, D.E., Pasternack, B.S. and Turndorf, H. The antinociceptive effect of S-(+)-ibuprofen in rabbits: Epidural versus intravenous administration. Anesth. Analg., 80(1):92-96, 1995.

Wang, N., Zhu, T. and Ho, D.D. Sequence diversity of V1 and V2 domains of gp120 from human immunodeficiency virus type 1: lack of correlation with viral phenotype. Journal of Virology, 69(4):2708-2715, 1995.

Warfel, A.H., Thorbecke, G.J. and Belsito, D.V. Synergism between interferon-gamma and cytokines or lipopolysaccharide in the activation of the HIV-LTR in macrophages. Journal of Leukocyte Biology, 57(3):469-476, 1995.

Whyatt, R.M., Garte, S.J., Cosma, G.N., Jedrychowski, W., Wahrendorf, J., Randall, M.C., Cooper, T.B., Ottman, R., Tang, D., Dickey, C., Crofts, R. and Perera, F.P. CYP1A1 mRNA levels in placental tissue as a biomarker of environmental exposure. Cancer Epid. Biomark. Prev., 4:147-153, 1995.

Zhang, P., Chiriboga, L., Jacobson, M., Marsh, E., Hennessey, P., Schinella, R. and Feiner, H. Mycosis fungoideslike T-cell cutaneous lymphoid infiltrates in patients with HIV infection. American Journal of Dermatopathology, 17(1):29-35, 1995.

Zhang, Y., Broser, M., Cohen, H., Bodkin, M., Law, K., Reibman, J. and Rom, W.N. Enhanced interleukin-8 release and gene expression in macrophages after exposure to Mycobacterium tuberculosis and its components. Journal of Clinical Investigation, 95(2):586-592, 1995.

Zhang, Y., Nakata, K., Weiden, M. and Rom, W.N. Mycobacterium tuberculosis enhances human immunodeficiency virus-1 replication by transcriptional activation at the long terminal repeat. Journal of Clinical Investigation, 95(5):2324-2331, 1995.

Zhitkovich, A., Voitkun, V. and Costa, M. Glutathione and free amino acids form stable complexes with DNA following exposure of intact mammalian cells to chromate. Carcinogenesis, 16(4):907-913, 1995.

Zolla-Pazner, S., O'Leary, J., Burda, S., Gorny, M.K., Kim, M., Mascola, J. and McCutchan, F. Serotyping of primary isolates from diverse geographic locations by flow cytometry. J. Virol., 69:3807-3815, 1995.

For information on **LAB NOTES** or to include items in future issues, please contact Ms. Gwynne Nemcek at extension 5349.